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Descriptions of two new species of the *Clubiona corticalis*-group (Araneae: Clubionidae) from China

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Abstract — The present paper describes two new *Clubiona corticalis*-group spider species collected from Yunnan and Sichuan provinces of China: *Clubiona pianmaensis* sp. nov. (♀♂) and *Clubiona cochleata* sp. nov. (♀♂). Illustrations or photographs of somatic and genitalic morphology are provided.

Key words — spiders, taxonomy, biodiversity, southern China

Introduction

Clubiona is the largest genus of the sac spider family Clubionidae. It currently contains about 472 nominal species (World Spider Catalog 2015), which comprising approximately 80 percent of the total number species of the family. Due to the large size of this genus, several authors have suggested subdivisions of the genus into species groups (Simon 1932; Gertsch 1941; Lohmander 1944; Edwards 1958; Wiehle 1965; Dondale & Redner 1982; Mikhailov 1995; Deeleman-Reinhold 2001) and even subgenera (Lohmander 1944; Mikhailov 1990, 1991, 2002). *Clubiona* species are widely distributed throughout most of the tropics and temperate regions, also in taiga zone and occurs even in tundra zone in the world (except South America).

Clubiona corticalis-group was first recognized by Simon (1932). Currently the *corticalis*-group includes 48 species mainly distributed in Eurasia and Australia (Mikhailov 1995, Deeleman-Reinhold 2001, Liu et al. 2007). So far, there are at least 20 *Clubiona corticalis*-group species recorded in China (Hu et al. 1987; Song et al. 1991; Zhang et al. 1998; Zhang et al. 2007; Wu et al. 2015), with most of them distributed in southern China, and only 4 species (*C. didentata, C. lamina, C. lyriformis, C. tengchong*) are known from a single sex.

While examining the specimens collected from Yunnan and Sichuan provinces, China, we found two new species of *Clubiona corticalis*-group, and describe them here.

Material and methods

All specimens were examined under a Tech XTL-II stereomicroscope. Photographs were taken using a Leica M205A stereomicroscope equipped with a DFC450 CCD. Carapace length was measured from the anterior margin to the posterior margin of the carapace medially. The eyes were measured as the maximum diameter of the lens in dorsal or frontal view. The measurements of legs are shown as total length (femur, patella, tibia, metatarsus, tarsus). The epigyne was cleared in a solution of potassium hydroxide (KOH) and transferred to 75% ethanol for taking photos, drawing and measuring. All measurements are in millimeters. The specimen is deposited in the Museum of Hebei University (MHBU), Baoding, China.

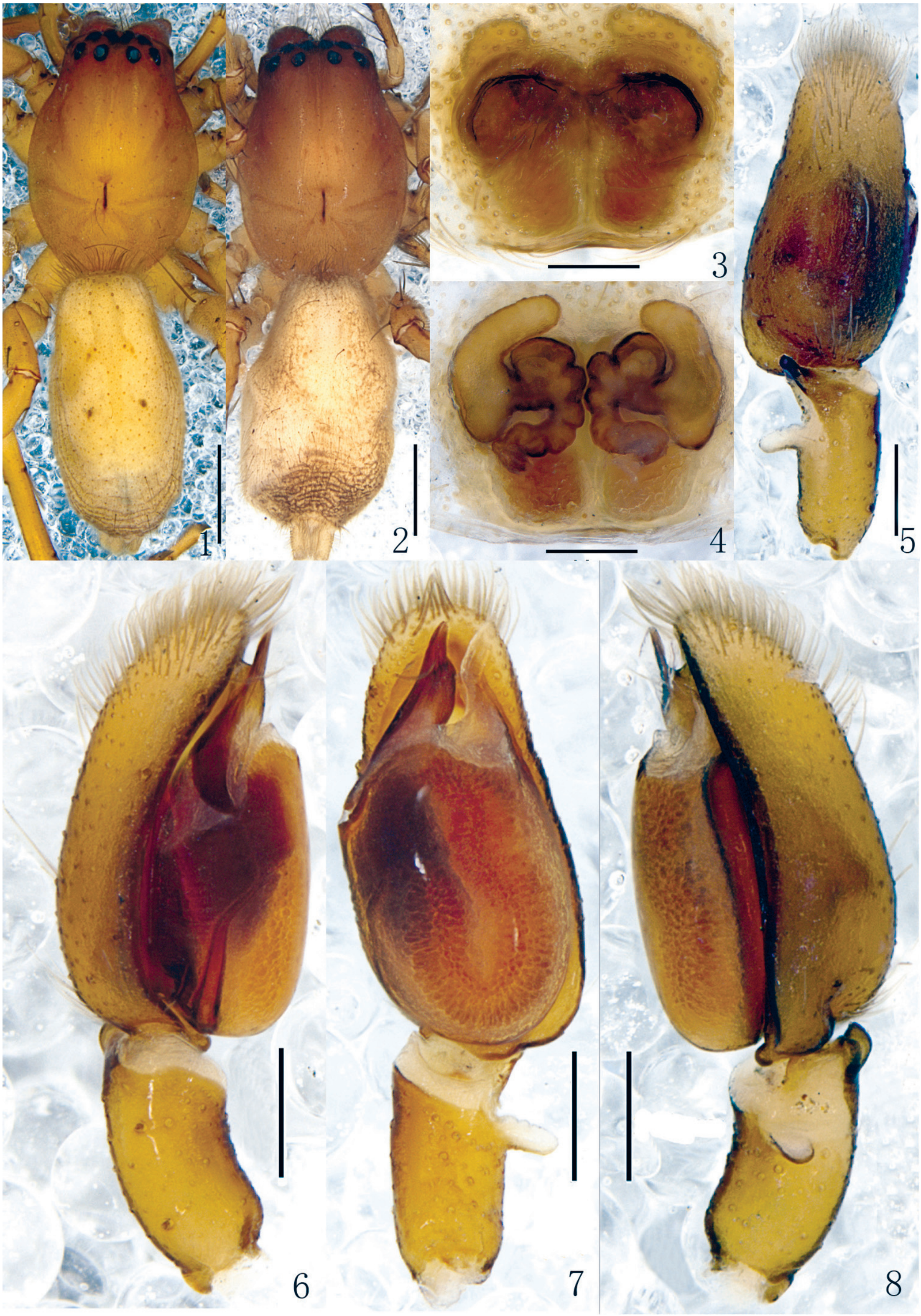
The following abbreviations are used: ALE, anterior lateral eye; AME, anterior median eye; B, bursa; C, conductor; CO, copulatory opening; DTA, dorsal tibial apophysis; E, embolus; FD, fertilization duct; MOA, median ocular area; PLE, posterior lateral eye; PME, posterior median eye; PPA, prolateral patellar apophysis; R, receptaculum; RFA, retrolateral femoral apophysis; RTA, retrolateral tibial apophysis.

Taxonomy

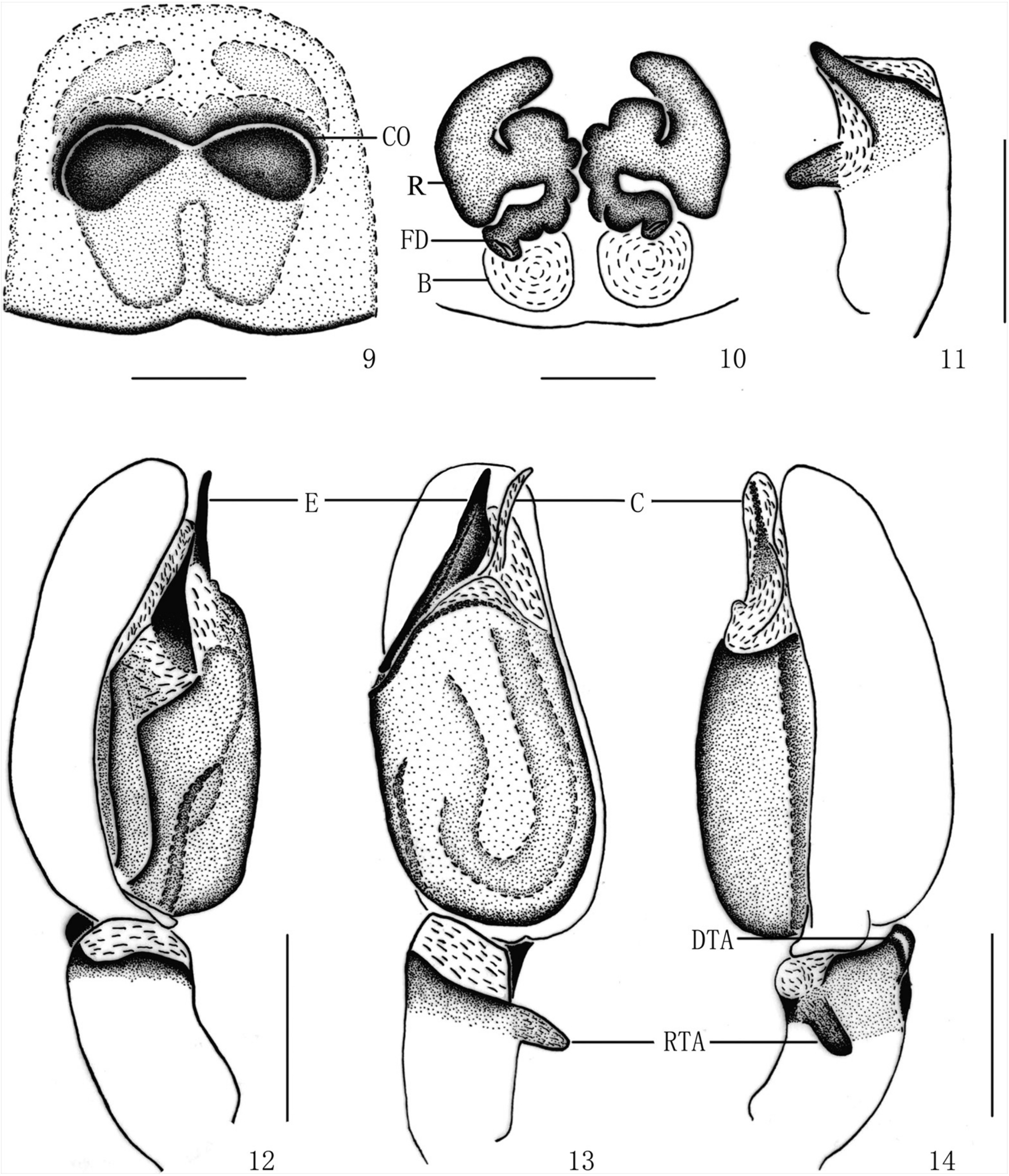
Clubiona pianmaensis sp. nov.
(Figs. 1–14)

Type materials. Holotype ♂, CHINA, Yunnan Province, Lushui County, Pianma Town (25°98.46′N, 98°81.73′E), 11 May 2004, Zhisheng Zhang leg. Paratype: 1♀, same data as holotype.

Diagnosis. Among the species of the *corticalis*-group, this new species resembles *C. cordata* Zhang & Zhu 2009 (see Zhang & Zhu 2009, figs. 7–11), but differs from the latter by: 1) the large epigynal atrium with two arch-shaped margins (Figs. 3, 9), while with small cordiform atrium in the latter; 2) the receptacula long tube-shaped or sac-shaped (Figs. 4, 10), while with pear-shaped receptacula in the latter; 3) longer RTA from ventral view (Figs. 7, 8, 13, 14),



Figs. 1–7. *Clubiona pianmaensis* sp. nov. 1, female habitus, dorsal view; 2, male habitus, dorsal view; 3, epigyne, ventral view; 4, vulva; 5, male left palp, dorsal view; 6, same, prolateral view; 7, same, ventral view; 8, same, retrolateral view. Scales = 1 mm (1–2); 0.2 mm (3–8).

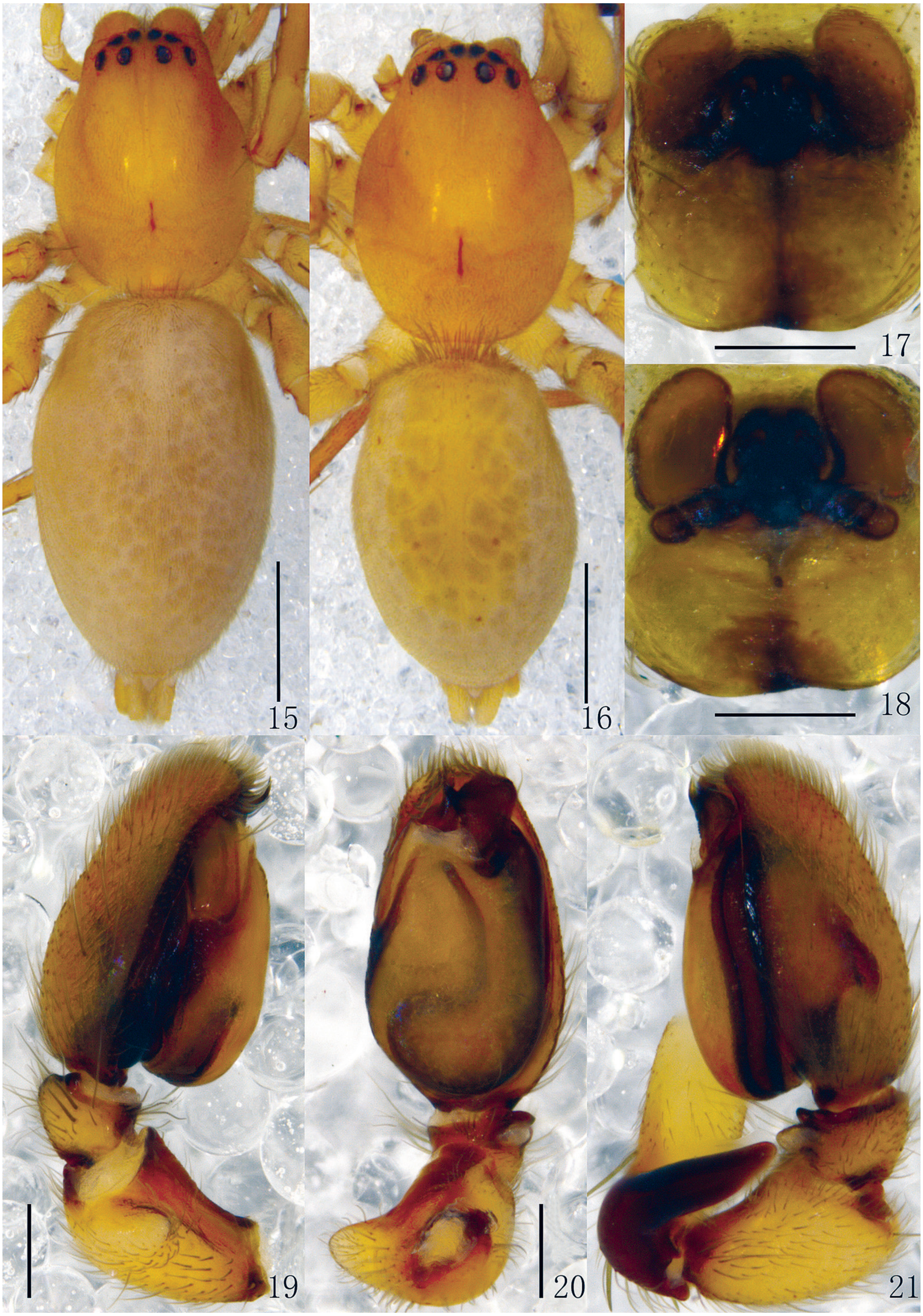


Figs. 9–14. *Clubiona pianmaensis* sp. nov. 9, epigyne, ventral view; 10, vulva; 11, retrolateral tibial apophysis, dorsal view; 12, male left palp, prolateral view; 13, same, ventral view; 14, same, retrolateral view. Scales = 0.2 mm.

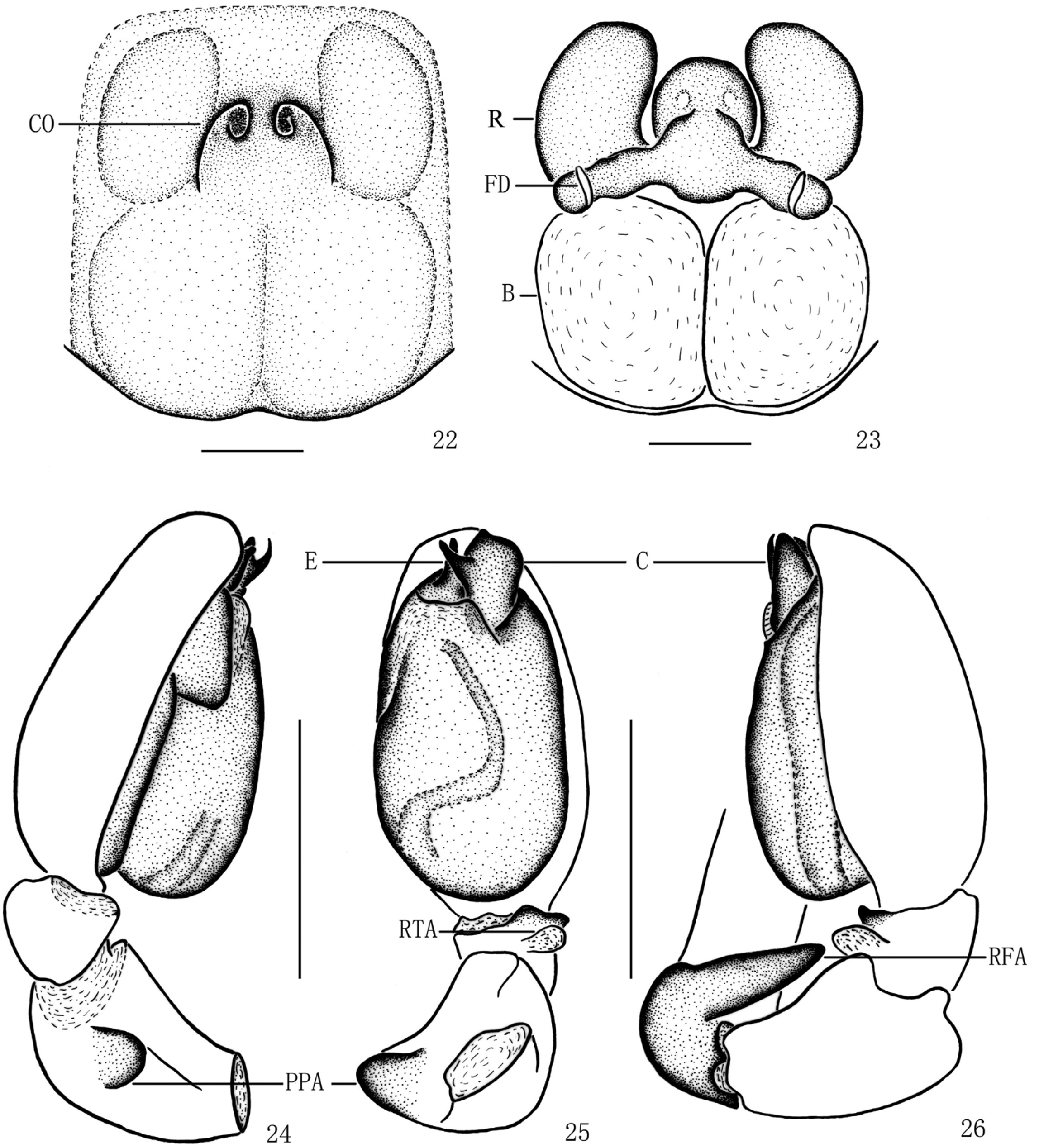
and not sharply pointed DTA from retrolateral view (Figs. 5, 11), while coracoid-shaped in the latter.

Etymology. The specific name refers to the type locality, adjective.

Description. *Male holotype*. Body 4.95 long; carapace 2.30 long, 1.74 wide; abdomen 2.57 long, 1.32 wide. Carapace oval in dorsal view (Fig. 2), light yellow, with a cluster of erect thin dark setae on the front ridge. Cephalic area slightly elevated; thoracic groove thin, long and dark, longitudinal. From above, anterior eye row slightly recurved, posterior eye row slightly procurved. Eye sizes and interdistances: AME 0.10, ALE 0.11, PME 0.12, PLE 0.16; AME–AME 0.10, AME–ALE 0.05, PME–PME 0.25, PME–PLE 0.16. MOA 0.39 long, front 0.33 wide, back 0.51 wide. Chelicerae yellow dark brown, promargin with five teeth, retromargin with four teeth. Endites light yellow, with dark serrula. Labium light yellow, longer than wide, tip with dark hairs. Sternum 1.24 long, 0.82 wide. Abdomen oval, light yellow, with conspicuous anterior tufts of hairs, dorsum with fine brown hairs and without dorsal



Figs. 15–21. *Clubiona cochleata* sp. nov. 15, female habitus, dorsal view; 16, male habitus, dorsal view; 17, epigyne, ventral view; 18, vulva; 19, male left palp, prolateral view; 20, same, ventral view; 21, same, retrolateral view. Scales = 1 mm (15–16); 0.2 mm (17–21).



Figs. 22–26. *Clubiona cochleata* sp. nov. 22, epigyne, ventral view; 23, vulva; 24, male left palp, prolateral view; 25, same, ventral view; 26, same, retrolateral view. Scales＝0.2 mm.

scutum. Legs light yellow, thin and long. Both tibiae I and II with two pairs of ventral spines, metatarsi I and II with one pair of ventral spines. Measurements of legs: I 5.50 (1.55, 0.75, 1.57, 1.07, 0.56), II 6.02 (1.65, 0.80, 1.80, 1.21, 0.56), III 4.73 (1.26, 0.61, 1.13, 1.30, 0.43), IV 6.73 (1.78, 0.71, 1.65, 2.01, 0.58).

Palp (Figs. 5–8, 11–14). Femur and patella without apophyses. Tibia with two apophyses, RTA long and thumb-shaped, DTA finger-like, directed retrolaterally in dorsal view. Embolus originating from prolateral median part of tegulum, short and broad, extending towards tip of cymbium and with beaked tip. Conductor long and thin from ventral view, membranous, accompanying embolus. Tegulum hardly expanded, with indistinct sperm duct seen from ventral view.

Female paratype. Body 5.17 long (Fig. 1); carapace 2.54 long, 1.87 wide; abdomen 2.57 long, 1.69 wide. Eye sizes and interdistances: AME 0.10, ALE 0.11, PME 0.09, PLE 0.07; AME–AME 0.08, AME–ALE 0.04, PME–PME 0.24, PME–PLE 0.14. MOA 0.22 long, front 0.23 wide, back 0.41 wide. Sternum 0.96 long, 0.70 wide. Measurements of legs: I 4.53 (1.31, 0.66, 1.21, 0.84, 0.51), II 5.14 (1.48, 0.74, 1.41, 0.97, 0.54), III 4.22 (1.25, 0.57, 0.90, 1.13, 0.37), IV 6.14 (1.66, 0.70, 1.40, 1.89, 0.49). Coloration lighter than in male. Other characters as in male.

Epigyne (Figs. 3–4, 9–10). Atrium transverse centrally with double anterior margin; copulatory openings large and central. Copulatory ducts short and wide; receptacula tube-shaped, located anteriorly; and bursae oval and semitransparent, located posteriorly.

Distribution. China (Yunnan).

Clubiona cochleata sp. nov.
(Figs. 15–26)

Type materials. Holotype ♂, CHINA, Sichuan Province, Emeishan County, Leidongping (29°34.58′N, 103°17.28′E), 14 May 2012, Luyu Wang leg. Paratype: 1 ♀, same data as holotype.

Diagnosis. Among the species of the *corticalis*-group, this new species resembles *C. submoralis* Wu et al. 2015 (see Wu & Zhang 2015, figs. 1–12), but differs from the latter by: 1) the epigynal atrium semicircle-shaped, with distinct lateral margin (Figs. 17, 22), while that of the latter butterfly-shaped; 2) the receptacula kidney-shaped and smaller than bursae (Figs. 18, 23), while that of the latter ball-shaped and almost equal in size to bursae; 3) palpal femur with long and strong retrolateral apophysis (Figs. 21, 26), while without apophysis in the latter; 4) palp with the non-membranous conductor with broad tip, while with membranous and thin conductor in the latter.

Etymology. The specific name is derived from the Latin word *cochleatus*, and refers to the shape of atrium, which is cochlea-shaped in ventral view.

Description. *Male holotype*. Body 3.76 long; carapace 1.63 long, 1.33 wide; abdomen 2.02 long, 1.22 wide. Carapace oval in dorsal view (Fig. 16), light yellow, with a cluster of erect thin dark setae on the front ridge. Cephalic area slightly elevated, thoracic groove thin, long and dark, longitudinal. In dorsal view, both eye rows recurved. Eye sizes and interdistances: AME 0.10, ALE 0.11, PME 0.10, PLE 0.10; AME–AME 0.05, AME–ALE 0.02, PME–PME 0.16, PME–PLE 0.11. MOA 0.16 long, front 0.23 wide, back 0.37 wide. Chelicerae light yellow, promargin with four teeth, retromargin with three teeth. Endites light yellow, with dark serrula. Labium light yellow, longer than wide, tip with dark hairs. Sternum 0.88 long, 0.62 wide. Abdomen oval, light yellow, with many grey yellow spots, conspicuous anterior tufts of hairs, dorsum with fine dark hairs and yellow dorsal scutum. Legs light yellow, thin and long. Both tibiae I and II with two pairs of ventral spines, both metatarsi I and II with one pair of ventral spines. Measurements of legs: I 3.48 (1.17, 0.45, 0.86, 0.69, 0.31), II 3.99 (1.25, 0.58, 0.93, 0.80, 0.43), III 3.48 (0.93, 0.53, 0.83, 0.81, 0.38), IV 4.97 (1.37, 0.47, 1.20, 1.47, 0.46).

Palp (Figs. 19–21, 24–26). Femur modified, with long and strong retrolateral apophysis originating from the median part. Patellae swollen, longer than wide, with short and rounded prolateral apophysis. Tibia short, with one membranous retrolateral apophysis originating from the median part and one sclerotized dorsal apophysis. Embolus originating from distal tegulum, short and extending towards tip of cymbium, and its tip spine-shaped. Conductor accompanying embolus, non-membranous, short and with broad tip, and its tip with a lateral process. Tegulum hardly expanded, with indistinct sperm ducts seen in ventral view.

Female paratype. Body 4.27 long; carapace 1.72 long (Fig. 15), 1.29 wide; abdomen 2.50 long, 1.67 wide. Eye sizes and interdistances: AME 0.08, ALE 0.09, PME 0.08, PLE 0.08; AME–AME 0.06, AME–ALE 0.04, PME–PME 0.20, PME–PLE 0.12. MOA 0.17 long, front 0.22 wide, back 0.37 wide. Sternum 0.91 long, 0.67 wide. Measurements of legs: I 3.56 (1.11, 0.40, 0.96, 0.66, 0.43), II 3.47 (1.02, 0.39, 0.96, 0.70, 0.40), III 3.49 (0.92, 0.53, 0.79, 0.86, 0.39), IV 4.60 (1.36, 0.46, 1.03, 1.32, 0.43). Coloration lighter than in male. Other characters as in male.

Epigyne (Figs. 17–18, 22–23). Atrium located centrally; copulatory openings located anteriorly, distinct and oval. Copulatory ducts short; receptacula located anteriorly, kidney-shaped, smaller than bursae; bursae located posteriorly, ball-shaped, membranous.

Distribution. China (Sichuan).

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